

TEN NEW SPECIES OF *LACHENALIA* (LILIACEAE)

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ABSTRACT

Ten new species of *Lachenalia* are described, and the characters of the ripe seeds are used for the first time as additional diagnostic features in the genus.

UITTREKSEL

TIEN NUWE *LACHENALIA* SOORTE (LILIACEAE)

Tien nuwe *Lachenalia* spesies word beskryf. Die eienskappe van die ryp sade word as aanvullende diagnostiese kenmerke in die genus *Lachenalia* voorgestel en aangewend.

INTRODUCTION

Since the publication of Baker's monograph on the genus *Lachenalia* in *Flora Capensis* VI, 1896-1897, collections of many new taxa have lain dormant in herbaria, particularly those of Rudolph Schlechter, and many others have been collected in recent years, a number of them apparently, as far as is known, with a very restricted distribution. It is proposed to publish them in sets of ten species, in order to validate the names, to be used in the monograph which is in preparation.

Lachenalia peersii Marl. ex Barker, sp. nov.

Differt a *L. rosea* floribus brevioribus albis urceolatis basi rotundatis, segmentis externis gibbosis viridofuscis, segmentis internis apicibus recurvis, staminibus stylisque inclusis. Seminibus, globosis, arillo inflato, terminale, mensure medio ad longo.

Plant up to 350 mm high, usually less. *Bulb* globose or depressed globose, 20-25 mm diam; outer tunics light brown, membranous. *Leaves* 1-2 lorate, up to 300 mm long and 10-25 mm broad, loosely clasping the base of the peduncle, or sometimes with a clasping base up to 70 mm long, green or tinged with maroon below, and sometimes above. *Peduncle* slender 50-200 mm long, usually dark maroon. *Inflorescence* racemose, few to many flowered, up to 120 mm long and 20-25 mm diam. *Flowers* urceolate, rounded at the base, lax, spreading to slightly cernuous, carnation-scented; pedicels 1.2 mm long; bracts narrow lanceolate, membranous; perianth 7-10 mm long; tube 2-3 mm long, white; outer segments ovate up to 6 mm long, white with greenish brown gibbositities; inner segments obovate up to 8 mm long, with upper edges recurved. white; stamens

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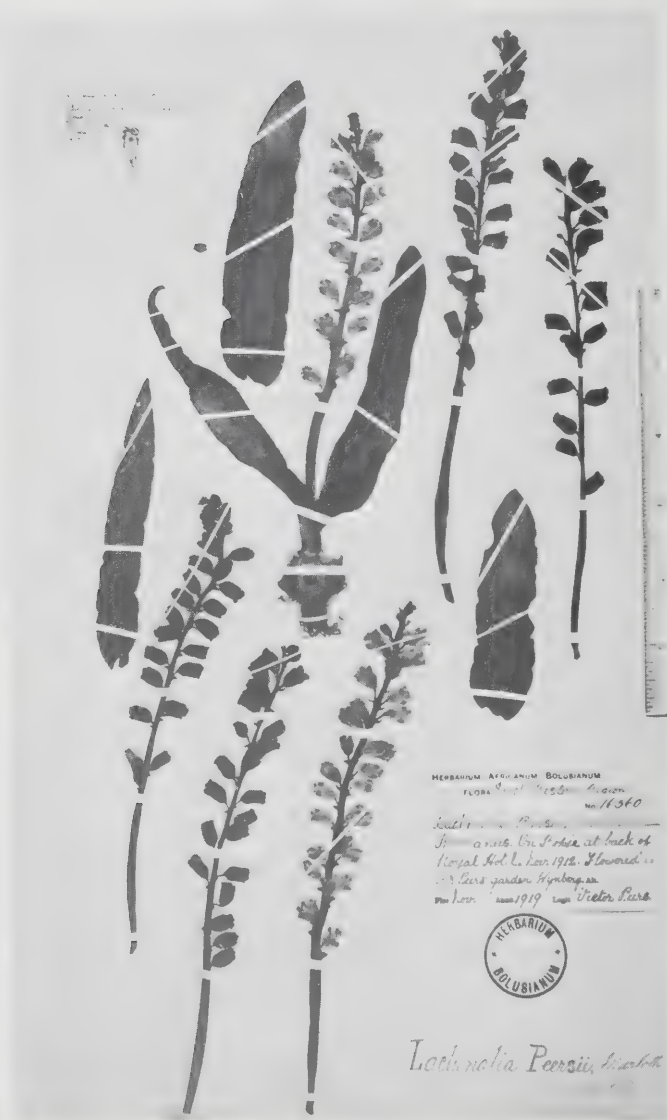


FIG. 1

Isotype sheet of *Lachenalia peersii*, in Bolus Herbarium No. 16360.

included, as long as the outer segments; ovary globose 3 mm diam., green; style up to 4 mm long. *Capsule* obovate, membranous, 6 mm diam; seeds globose; aril inflated, terminal, narrow, medium to long.

DIAGNOSTIC CHARACTERS

Lachenalia peersii is allied to *L. rosea* Andr. but differs in having the urceolate flowers rounded at the base, and the tips of the inner segments recurved. It is also characterised by having a carnation scent.

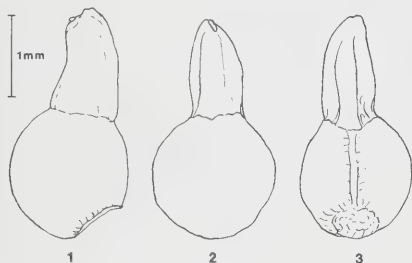


FIG. 2

Lachenalia peersii: 1. seed side view; 2. seed from above; 3. seed from below.

Type Material: CAPE PROVINCE—3419 (Caledon): Hermanus, (-AC), November 1915, *Peers s.n.* sub Herb. Marloth 7263 (PRE, holo.); November 1919 *Peers s.n.* sub. BOL 16360 (BOL, iso.).

This attractive species was collected at Hermanus in 1912 by Mr V. S. Peers, who grew it in his garden in Kenilworth, Cape. In November 1915 he gave flowering specimens to Dr Rudolph Marloth, who preserved them in his herbarium collection, and gave the species the manuscript name *Lachenalia peersii* in honour of its collector. In December 1917 a photograph by Mr Peers, of a pot of bulbs in flower, was published in "South African Gardening and Home Life", with the caption "*Lachenalia peersii* a new variety found in Hermanus and recently named". In November 1919 further specimens from Mr Peers' garden were preserved in the Bolus Herbarium. The sheet was annotated in the hand of Mrs L. Bolus "*Lachenalia peersii* Marl. Typus in Litt" and it was presumed to be a valid species. However as no trace of a description can be found in literature, Dr Marloth's manuscript name has now been validated.

He named it after the man whose name is usually associated with Peers Cave at Fish Hoek, which he and his son Bertie excavated and made famous. It is not generally known that Mr Peers was an enthusiastic and well informed botanical collector of some note, who contributed as many as 700 collections of succulent and bulbous plants to Kirstenbosch, in the early years after it was established.

The species is widely distributed in the south western part of the Caledon district, where it occurs in rocky ground. Out in the open it is often rather stunted, but plants flowering on recently burnt ground can become strong and robust.

SPECIMENS EXAMINED

CAPE PROVINCE—3418 (Simonstown): Palmiet River Bridge (-BD), 30/10/1962, *Thomas s.n.sub.* NBG 70017 (NBG); Sunny Seas, 29/9/1967, and 27/10/1967, *Barker 10516* (NBG); Harold Porter Botanic Gardens, Bettys Bay, 27/10/1970, *Ebersohn s.n.sub.* NBG 92682 (NBG); Disa Kloof, Bettys Bay, 9/12/1966, (fruiting); 1/11/1968, (flowering) *Rourke 686* (NBG); Hangklip, 8/12/1965, (fruiting) *Barker 10368* (NBG); Waterfall Kloof, Hangklip Nov. 1948, *Stokoe s.n.sub.* SAM 61313 (SAM).

—3419 (Caledon): 12 m. W of Caledon (-AB), 17/9/1934, *Salter 4861* (BM, BOL, K); Hermanus (-AC), Nov. 1915, *Peers s.n.sub.* Herb. Marloth 7263 (PRE, holo); Nov. 1919, *V. S. Peers s.n.sub.* BOL 16360 (BOL); Nov. 1921, *Rogers s.n.sub.* PRE 26566 (PRE); 8/11/1963, *Thomas and Barnard s.n.sub.* NBG 70714 (NBG); Hermanuspetrusfontein, 23/10/1897, *E. E. Galpin 4755* (PRE, K); Riviera Hotel Flats, 10/10/1916, *Purcell 107* (SAM); 4/10/1918, *Purcell s.n.sub.* (SAM); near Hermanus, 16/10/1966, *Barker 10484* (NBG); Voelklip Kloof, 18/11/1973, *Esterhuysen 33357* (NBG); Voelklip Bot.Soc. Reserve, 22/10/1969, *Rourke s.n.sub.* NBG 93557 (NBG); Onrust River, 1/12/1951, *Esterhuysen 19268* (BOL); Shaws Mt, Sept. 1938, *Gillett 4464* (BOL, K); De Wets Bay, Kleinmond, 1/11/1968, *Barker 10515* (NBG).

***Lachenalia multifolia* Barker, sp. nov.**

Distinguitur foliis numerosis filiformibus teretibus pallide viridibus basi albis succulentis, inflorescentia racemosa multiflora, pedicellis brevis patulis, floribus campanulatis albis, segmentibus leviter cucullatis fere aequantibus pallide viridibus gibbosis, staminibus perspicue exsertis rectis, seminibus globosis, arillo jugoso terminale perbreve.

Plant 70–200 mm high, usually dwarf. *Bulb* globose 10–20 mm diam., outer tunics papery, brownish. *Leaves* 5–13, usually as long or a little longer than the peduncle, occasionally longer, 150–170 mm long; blade filiform terete, yellow-green, broadening into white, fleshy, flattened bases 20–30 mm long and 5–8 mm broad. *Inflorescence* racemose many-flowered up to 70 mm long and 30–50 mm diam.; peduncle slender, green or tinged with red; pedicels spreading up to 10 mm long, usually shorter. *Flowers* strongly scented, spreading; perianth 8 mm long; tube 3 mm long, white; outer segments oblong 5,5 mm long, 3 mm wide, white with pale green gibbositities; inner segments as long as outer, narrow oblong, white with green keels, all segments slightly spreading with the apex slightly cucullate; stamens exserted evenly spaced up to 7 mm long; ovary ovoid 3,5 mm long pale

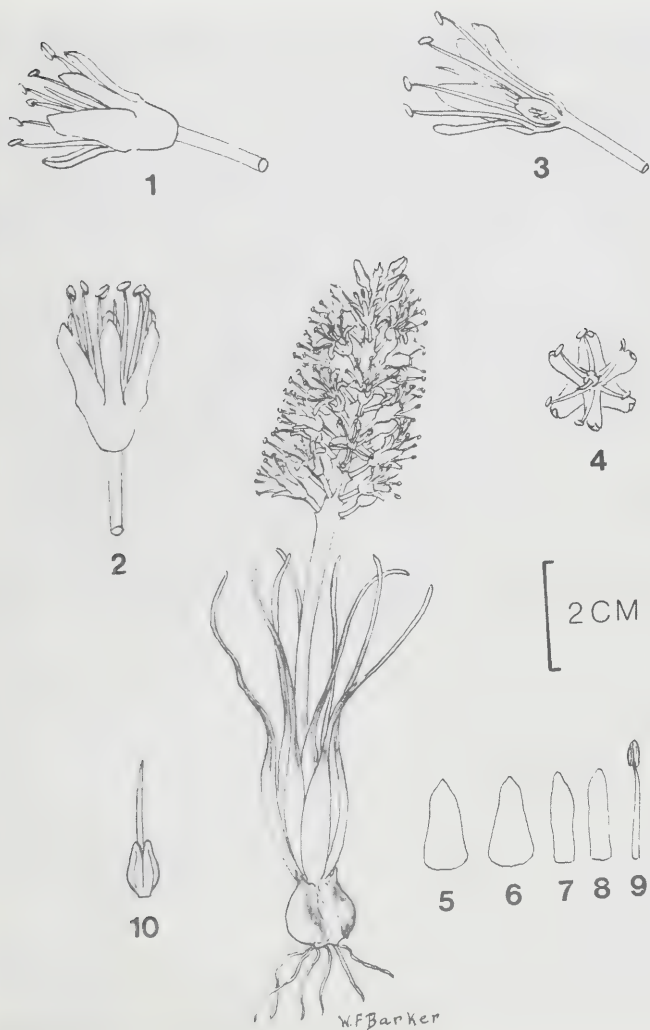


FIG. 3

Lachenalia multifolia: 1. flower side view; 2. flower from below; 3. transverse section of flower; 4. flower front view; 5. lateral outer perianth segment; 6. upper outer perianth segment; 7. lateral inner perianth segment; 8. lower inner perianth segment; 9. stamen; 10. gynoecium, all $\times 3$.

green; style finally as long as stamens. *Capsule* obovate membranous 5 mm diam., 1–2 seeds in each loculus; seed ovoid, aril very short, ridged terminal.

DIAGNOSTIC CHARACTERS

Lachenalia multifolia most closely resembles *L. polyphylla* but is distinguished by having the swollen bases of the leaves white and smooth, the white flowers are campanulate with the segments slightly spreading and cucullate, while those of *L. polyphylla* are tinged maroon, urceolate, with the tips of the inner segments recurved.

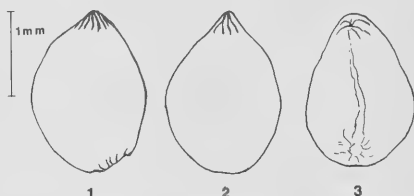


FIG. 4

Lachenalia multifolia: 1. seed side view; 2. seed from above; 3. seed from below.

Type Material: CAPE PROVINCE—3319 (Worcester): Karoo Poort (-BA), 26/9/1944, Barker 3053 (NBG, holo.).

Lachenalia multifolia is one of only five species in the genus having many leaves. It resembles *L. polyphylla* superficially but is very distinct when compared in detail, and their habitats differ widely; it is found on rocky hillsides, in rock pans and rock crevices, while *L. polyphylla* favours flat open ground. The distribution of the species too is widely separated, *L. multifolia* occurs in the Worcester, Ceres, and Calvinia districts, while *L. polyphylla* is only known from the Malmesbury, Piketberg and Tulbagh districts. The two species differ considerably in the characters of their seeds, *L. multifolia* has a seed with a very small ridged aril, that of *L. polyphylla* is covered entirely by an irregular pattern of ridges.

SPECIMENS EXAMINED

CAPE PROVINCE—3119 (Calvinia): 10 m N. of Calvinia (-BD), 25/9/1962 Levyns (NBG).

—3319 (Worcester): Ceres (-AD), 9/1925, Nielson *s.n.* sub. Hort. NBG 1008/25 (BOL); Ceres Karoo 10/1931 *H. Herre s.n.* sub Hort. Stell. Univ. Gdns 3844 (BOL); Karoo Poort (-BA) 26/9/1944, Barker 3053 (NBG holo); 22 m N. of Karoo Poort, 19/9/1954, *H. Hall* 947 (BOL);

—3320 (Montagu): Constable, 4/10/1940 (-AD), Compton 9737 (NBG); 10/1940, Esterhuysen 5083 (BOL).

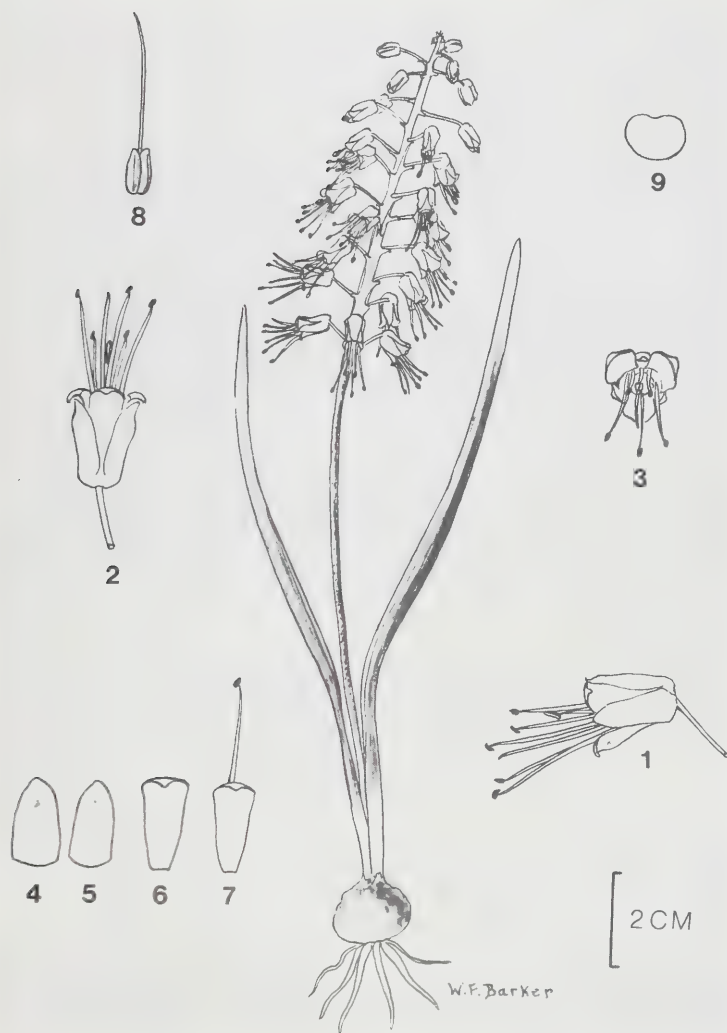


FIG. 5

Lachenalia esterhuysenae: 1. flower side view; 2. flower from below; 3. flower front view; 4. upper outer perianth segment; 5. lateral outer perianth segment; 6. lateral inner perianth segment; 7. lower inner perianth segment; 8. gynoecium; 9. transverse section of leaf, all $\times 3$.

***Lachenalia esterhuysenae* Barker, sp. nov.**

Distinguitur foliis 1–2 longis linearibus teretibus venetis basi supra canaliculatae, pedunculo longo gracile, inflorescentia laxo, pedicellis longis patulis, floribus cremeis campanulatis cernuis, staminibus perspicue exsertis. Seminibus ovoideis, arillo jugoso, terminale, minuto.

Plant 150–450 mm high. *Bulb* globose or depressed globose 12–18 mm diam., with soft brown outer tunics, not produced into a neck. *Leaves* 1–2, linear, terete, with a shallow channel down the upper face toward the base, scarcely clasping the base of the peduncle, erect with the support of surrounding vegetation, 140–360 mm long, up to 5 mm diam., blue-green, shading to reddish-brown near the base, without markings. *Peduncle* up to 340 mm long, very slender, tinged or minutely spotted with reddish-brown. *Inflorescence* racemose 40–110 mm long many-flowered, sterile portion very short, flowers lax, cernuous; bracts very small, apex narrow lanceolate, membranous, translucent; pedicels 4–10 mm long, very slender, spreading, cream. *Flowers* 4–6 mm long, 3 mm diam. at base, cernuous, campanulate, rounded at the base; tube 1 mm long, cream; outer segments 3–4 mm long, slightly spreading, cream with green gibbosities; inner segments slightly longer than the outer up to 5 mm long, slightly spreading, cream with a greenish blotch near the apex, upper edge of margin recurved with a small central cusp; stamens well exserted up to 13 mm long; ovary ovate, up to 3 mm long, green; style exserted up to 12 mm long. *Capsule* obovoid, membranous, 3 mm diam. seeds shining, ovoid, aril ridged, terminal, minute.

DIAGNOSTIC CHARACTERS

Lachenalia esterhuysenae is easily recognized by its small, cernuous, cream flowers with well exserted stamens, and long spreading pedicels, and by its very long, blue-green, filiform, terete leaves.



FIG. 6

Lachenalia esterhuysenae: 1. seed side view; 2. seed from above; 3. seed from below.

Type Material: CAPE PROVINCE—3219 (Wuppertal): S. Cedarberg, Sneeuwberg Area, above Bakleikraal (-AC), *E. Esterhuysen* 34149 (BOL, holo.; K, iso.; NBG, iso.; MO, iso.; PRE, iso.; S, iso.).

This interesting high altitude species was first collected on 30th September 1940 in the Pakhuis Pass by Miss E. E. Esterhuysen, while on a journey to

Calvinia to witness the total eclipse of the sun. Only one flowering bulb was collected, which was later illustrated. A second small collection was made on 11th December 1950, also by Miss Esterhuysen, at the northern end of the Cedarberg Sneeuwkop, below the shale band at 1 200 m, extending its known range somewhat. It was found again in the first locality on 19th October 1965, when Mrs M. Thomas and Miss W. Barker were travelling through the Pakhuis Pass. The plants were growing at about 900 m on a rocky slope, appearing through low fynbos, and the peduncles and leaves were elongated to penetrate to the light. Bulbs were grown and ripe seed was collected on 30th November 1965. On 11th December 1975 another extensive collection was made by Miss Esterhuysen, at the southern end of the Cedarberg Sneeuwberg, above Bakleikraal, below the shale band at 1 200 m. It consisted of flowering and young fruiting plants some of which were grown, and produced mature seeds in December 1976. It is named in honour of Miss E. E. Esterhuysen, who was Botanical assistant at the Bolus Herbarium for many years, and has always been most helpful and generous in supplying material and information, particularly of high altitude species.

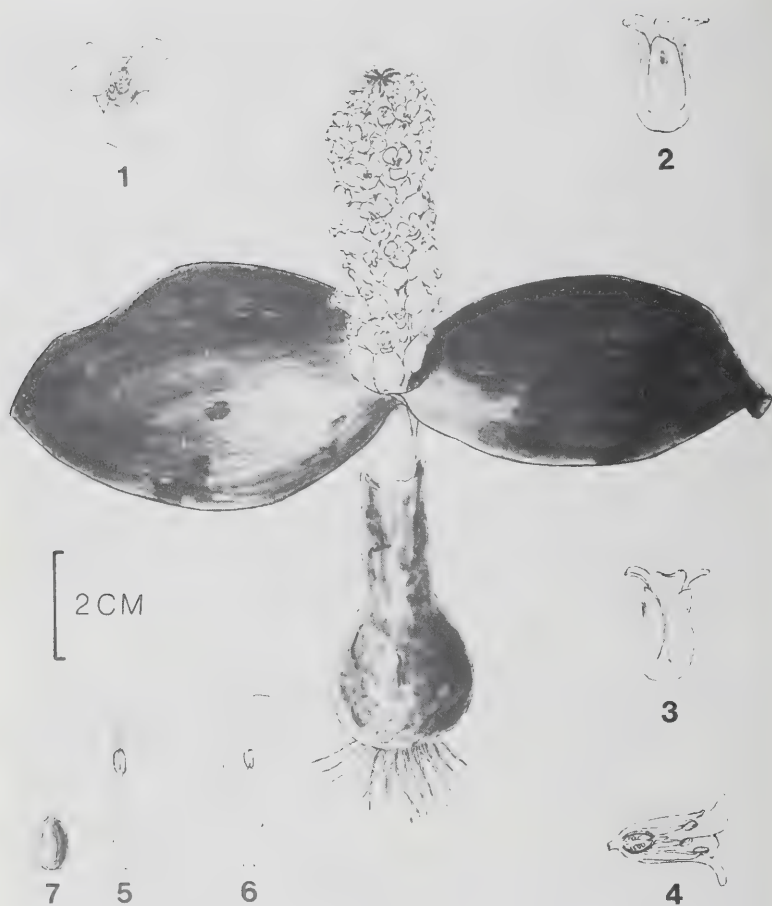
SPECIMENS EXAMINED

CAPE PROVINCE—3219 (Wuppertal): Pakhuis Pass, Clanwilliam, (-AA), 3/9/1940, *E. Esterhuysen s.n.* sub NBG 72233 (NBG); 19/10/1965, *Barker 10319*; Cedarberg Sneeuwberg (-AC), 11/12/1950, *E. Esterhuysen 18023* (BOL); S. Cedarberg area above Bakleikraal, 11/12/1975, *E. Esterhuysen 34149* (BOL, holo.; K, iso.; NBG, iso.; MO, iso.; PRE, iso.; S, iso.).

Lachenalia congesta Barker, sp. nov.

Distinguitur foliis 2 ovatis oblongis prostratis supre atroviridis infra maroninos, inflorescentia spicato congesto, pedunculo brevissimo saepe non supraterraneo, floribus cremeis gibbosis virido-fuscis, segmentibus internis pellucidis apice recurvatis, staminibus inclusis, seminibus ovoideis, arillo jugoso terminale, perbreve, testa foveolata.

Plant 80–140 mm high, dwarf. *Bulb* obovate, 15–24 mm diam. with light brown, spongy outer tunics produced into a long neck up to 40 mm long; leaf-sheath obtuse, transparent, extending above the neck. *Leaves* 2, resembling those of *Massonia*; blade thick, ovate to oblong, subacute, prostrate 35–75 mm long and 34–56 mm wide, dark green or tinged with maroon, sometimes with a few irregular blotches above, suffused with maroon below, margin maroon; bases white, clasping the peduncle. *Inflorescence* a very dense spike 25 mm diam., up to 70 mm long, flowers suberect to spreading, strongly scented; peduncle very short often none above ground. *Bracts* narrow-lanceolate, up to 5 mm long membranous, white. *Flowers* sessile up to 13 mm long; tube 3 mm long, very pale blue; outer segments 7 mm long, ovate erect, white shading to pale yellow with green



G. J. Lewis.

FIG. 7

Lachenalia congesta: 1. flower front view $\times 3$; 2. flower side view $\times 2$; 3. flower from below $\times 2$; 4. transverse section of flower $\times 2$; 5. outer perianth segment and stamen $\times 3$; 6. inner perianth segment and stamen $\times 3$; 7. gynoecium $\times 3$; Del G. J. Lewis.

gibbosities and pellucid recurved apices; inner segments 10 mm long, narrow oblong emarginate, cream shading to yellow with green keels, pellucid apices recurved; stamens included, 5 mm long, filaments white; ovary oblong up to 4 mm long, green; style usually short 2–3 mm long, white. *Capsule* obovate, carpels each with a portion of the persistent style forming a cusp at the apex; seed comparatively large, globose with a much reduced conical ribbed aril, the surface apparently with a depressed pattern. (Only one capsule and one seed was produced).

DIAGNOSTIC CHARACTERS

Lachenalia congesta is a very distinctive species, with its dense inflorescence and prostrate leaves. It belongs to the group of plants which have seeds with the aril almost completely reduced. It appears to be most closely allied to *L. isopetala*, another very distinct species, as their seeds are similar in shape and the largest in the group.



FIG. 8

Lachenalia congesta: 1. seed side view; 2. seed from above; 3. seed from below.

Type Material: CAPE PROVINCE—3220 (Sutherland): Sutherland (-BC), 8/7/1968, *F. Stayner s.n.* sub. NBG 93575 (NBG, holo.); 18/6/1970, *Stayner s.n.* sub. NBG 93574 (NBG, iso.).

The earliest record of this unusual and interesting species with its congested inflorescence emerging from two prostrate, broad, dark green leaves, was made by Mr P. Ross-Frames, who collected it at Muldersfontein 10 miles west of Middelpos, in the Calvinia district, on 7th August 1933. He brought it to the Bolus Herbarium, where Miss G. J. Lewis made the accompanying painting. She noted that the leaves lying flat on the ground resembled those of a *Massonia*. When not in flower they could very well be mistaken for one. About 20 years later it was collected S.S.E. of Sutherland by Acocks, and in 1955 by Leistner. On the 8th of August 1968 another collection, this time in bud, was brought to the Compton Herbarium by Mr F. Stayner, for many years Curator of the Worcester Karoo Botanic Garden, also collected at Sutherland. Bulbs flowered in a pot on the 22nd of July 1968 and again on the 18th June 1970. Only one capsule matured,

and one seed developed, which had a very reduced aril, and the testa appeared to have a depressed pattern on it. The plant according to Acocks grows in shale gravel, in mountain Rhénosterveld.

SPECIMENS EXAMINED

CAPE PROVINCE—3120 (Williston): near Muldersfontein, 10 m W. of Middelpoos (-CC), 7/8/1933, *P. Ross-Frames s.n.* sub. BOL 21365 (BOL).
—3220 (Sutherland): Sutherland (-BC), 8/7/1968, *Stayner s.n.* sub. NBG 93575 (NBG, holo.); 18/6/1970, *Stayner s.n.* sub. NBG 93574 (NBG, iso.); 14 m S.S.E. of Sutherland (-BD), 24/8/1953, *Acocks 16935* (K); 19.5 m S.S.E. of Sutherland, 1/9/1955, *Leistner 281* (K).

Lachenalia namaquensis Schltr. ex Barker, sp. nov.

Distinguitur foliis 1–2 linearibus lanceolatis canaliculatis ad apicem semiteretibus, inflorescentia spicata, floribus rectis vel patulis, periantho externo urceolato tubo caeruleo segmentis magenteis, segmentibus internis longioribus patentibus recurvatis supernis albis inferiore magenteo, staminibus segmentibus internis brevioribus, seminibus globosis, arillo jugoso, terminale, breve.

Plant up to 230 mm high. *Bulb* globose, small 10–15 mm diam.; outer tunics thin, membranous, russet-brown, produced into a short neck; bulbils produced at soil level from a few stolons from the base. *Leaves* 1–2, linear-lanceolate, up to 140 mm long; clasping base up to 60 mm long white, blade green, conduplicate or with inrolled margins, narrowing to the semiterete apex. *Peduncle* slender up to 120 mm long. *Inflorescence* spicate up to 100 mm long, 20 mm diam., few to many flowered; bracts very small, subobtus. *Flower* suberect to spreading; perianth 8–11 mm long, narrow urceolate; tube 2–3 mm long, bright blue; outer segments 5 mm long, ovate, subacute, magenta with maroon-purple gibbosities; inner segments up to 9 mm long, oblanceolate, narrowing to the base, the two upper overlapping, spreading at the apex, shining white, tinged magenta at the apex; lower segment narrower, deep magenta, apex recurving; stamens a little shorter than the inner segments; ovary ovate 2–3 mm diam. style up to 6 mm long. *Capsule* oblong, membranous, 5 mm diam.; seeds globose, aril ridged, short, terminal.

DIAGNOSTIC CHARACTERS

Lachenalia namaquensis is characterised by its one to two leaves, which have linear lanceolate, conduplicate blades, narrowing to a semiterete apex. The flowers are sessile, narrow urceolate, usually blue at the base, shading to magenta, the inner segments are longer than the outer, the upper two are white while the lower one is deep magenta. (A colour form with rose coloured flowers was found at Klipfontein by Mr J. W. Mathews on 27th October 1930.) The bulb produces



FIG. 9

Lachenalia namaquensis: 1. flower side view; 2. flower from below; 3. transverse section of flower; 4. flower front view; 5. lateral outer perianth segment; 6. upper outer perianth segment; 7. lateral inner perianth segment; 8. lower inner perianth segment; 9. gynoecium, all $\times 3$.

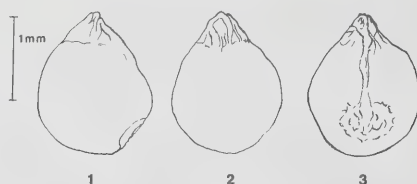


FIG. 10

Lachenalia namaquensis: 1. seed side view; 2. seed from above; 3. seed from below.

bulbils at ground level, on long stolons from the base of the bulb, and the plants are usually found in colonies.

Type Material: CAPE PROVINCE—2917 (Springbok): 6 m S. of Steinkopf, (-BD), 23/8/1959, *Barker 9020* (NBG, holo.).

Lachenalia namaquensis was collected by Rudolph Schlechter as early as 23rd September 1897, and he distributed it to many herbaria under its manuscript name. As its distribution appears to be confined to Namaqualand, the name is appropriate and it is now validated.

It is most closely allied to *L. framesii* Barker which differs from it in having shorter yellow flowers, with all the inner segments tipped with deep magenta, and the leaves are lanceolate with undulate margins. The seeds in the two species are similar.

In its natural habitat *L. namaquensis* is a dainty dwarf species, which increases rapidly by means of bulbils on long stolons, and it usually occurs in colonies. In 1959 it was found growing in mass, in pockets on huge granite boulders near Steinkopf, and more recently in stony clay soil, or in sandy soil, in other localities.

SPECIMENS EXAMINED

CAPE PROVINCE—2816/—2817 (Oranjemund/Vioolsdrif): Richtersveld, 26/8/1931, *Herre s.n.sub.* Hort. SUG 3862 (BOL); 9/9/1936 *Herre s.n.sub.* Hort. SUG 3902 (BOL).

—2917 (Springbok): Steinkopf-Klipfontein (-BA), 26/8/1931, *Herre s.n.sub.* Hort. SUG 3836 (BOL); Steinkopf-Obob, Sept. 1935, *Herre s.n.sub.* Hort. SUG 3856 (BOL); 4 m N.W. by W. of Steinkopf, 21/9/1957, *Acocks 19529* (NBG); Klipfontein, Oct. 1930 and 1931, *Mathews s.n.sub.* Hort. NBG 2228/29 (BOL), Oct. (colour var.); Oct. 1926, *Pillans 5712* (BOL); Steinkopf (-BA/-BC), 23/9/1897, *R. Schlechter 11383* (B, BOL, G, GRA, K, LD, PRE, Z), 18/9/1933, *Salter 3755* (BOL); Steinkopf-Platteklip, *Herre s.n.sub.* Hort. SUG 3862 (BOL); 1 m W. of Steinkopf, 19/10/1971 and 19/10/1973, *Hall 4175* (NBG), 26/8/1931, *Herre s.n.sub.* Hort. SUG 3837 (BOL); 6 m S. of Steinkopf (-BD), 23/8/1959, *Barker 9020* (NBG, holo.); Spektakel Mt. (-DA), 26/9/1974, *Goldblatt 2788*

(NBG); 14 m W. by S. of Springbok, 24/9/1957, *Acocks 19571* (NBG); 4 m E. of Springbok (-DB), 15/9/1948, *Salter s.n.* sub. NBG Hort. 2075/1933 (NBG).

***Lachenalia verticillata* Barker, sp. nov.**

Distinguitur folio unico glauco-viridi falcati vel lanceolati conduplicati infra maculati basi amplexantibus fasciata, inflorescentia spicata floribus patentibus in quoque verticillo tres, periantho externo urceolato tubo caeruleo segmentibus pallidis, segmentibus internis longioribus patulis recurvatis apice magenteis, staminibus segmentibus internis brevioribus, seminibus globosis arillo jugoso terminale mense medio.

Plant up to 250 mm high. *Bulb* globose up to 20 mm diam., outer tunics spongy, brown; basal sheath membranous, obtuse, up to 20 mm long. *Leaf* 1, falcate to lanceolate, conduplicate; blade spreading, up to 90 mm long and 20 mm broad, blue-green, blotched with purple on the lower side, margin undulate; clasping base up to 50 mm long, banded with purple above shading to magenta at the base. *Peduncle* slender up to 90 mm long. *Inflorescence* spicate, up to 100 mm long and 20–25 mm diam.; flowers in verticils of three, spreading; bracts very small. *Flowers* 9–12 mm long, urceolate; tube 3 mm long dull blue; outer segments paler, ovate convex, subacute, 6 mm long and 5 mm broad; lateral inner segments obovate oblong, 10 mm long, 3 mm broad near the apex, with purple recurved tips; lower inner segment slightly longer and conduplicate with a purple recurved tip; stamens included, 6 mm long; ovary globose, 2 mm long; style 6 mm long. *Capsule* globose 6 mm diam.; seed globose aril ridged, terminal, medium length.

DIAGNOSTIC CHARACTERS

Lachenalia verticillata is distinguished by its single falcate to lanceolate conduplicate leaf which is spotted on the lower side of the blade, banded on the clasping base and the sessile flowers are arranged in three-flowered verticils. The outer perianth is urceolate and broadest at the base, and the inner segments are longer, spreading, recurved, and tipped with purple.

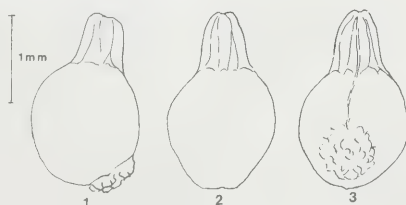


FIG. 12

Lachenalia verticillata: 1. seed side view; 2. seed from above; 3. seed from below.



FIG. 11

Lachenalia verticillata: 1. flower side view; 2. flower from below; 3. flower front view; 4. transverse section of flower; 5. lateral outer perianth segment; 6. upper outer perianth segment; 7. gynoecium, $\times 3$.

Type Material: CAPE PROVINCE—2917 (Springbok): 3 m S.E. of Steinkopf, 18/9/1933, *Salter 3746* (BOL. holo.; BM, iso.; K, iso.).

Only two collections have been made of this unique species, in spite of the fact that it flowers in September when many people visit the area in a good flower season. It was first collected by H. Bolus near O'Okiep in September 1833. The second collection was made fifty years later, in September 1933 by Paymaster Captain T. M. Salter who found it not very far from the original locality, at Springbok, in Namaqualand.

SPECIMENS EXAMINED

CAPE PROVINCE—2917 (Springbok): 3 miles S.E. of Springbok (-BA/-BC), 18/9/1933, *Salter 3746* (BOL, holo.; BM, iso.; K, iso.); Near O'Okiep (-DB), 9/1883, *H. Bolus 6590* (BOL, K, SAM).

Lachenalia concordiana Schltr. ex Barker, sp. nov.

Distinguitur folio unico, lamina angusta lineari conduplicato curvato, basi amplexententi viridi fasciata, floribus sessilibus late campanulatis, staminibus segmentibus internis aequantibus, seminibus oblongis, arillo jugoso, terminale, mensura medio.

Plant up to 200 mm high. *Bulb* obovate, 12–20 mm diam.; with many dark brown tunics produced into a neck up to 25 mm long. *Leaf* 1, up to 120 mm long; blade narrow linear-lanceolate, conduplicate, spreading, curved, green up to 80 mm long; clasping base slender, banded with green in the upper half, up to 70 mm long. *Peduncle* short, up to 40 mm long above the clasping base. *Inflorescence* spicate 20–100 mm long, up to 20 mm diam., few to many flowered, flowers spreading, and usually arranged in three-flowered verticils. *Flowers* widely campanulate 9–12 mm long; tube 3 mm long (colour not recorded); outer segments 7 mm long ovate acute spreading slightly, tips recurved; inner segments 9 mm long, the two lateral obovate, subacute overlapping, recurving at the apex; lower ovate acute spreading to form a lip; stamens as long as the inner segments; ovary ovoid 4 mm long; style finally longer than the stamens. *Capsule* membranous 8 mm long, ovate; seed oblong, aril ridged, terminal, of medium length.

DIAGNOSTIC CHARACTERS

Lachenalia concordiana is distinguished by its single leaf with a narrow linear lanceolate, conduplicate blade, and the clasping base banded with green. The spicate inflorescence has the widely campanulate flowers arranged in three-flowered verticils.

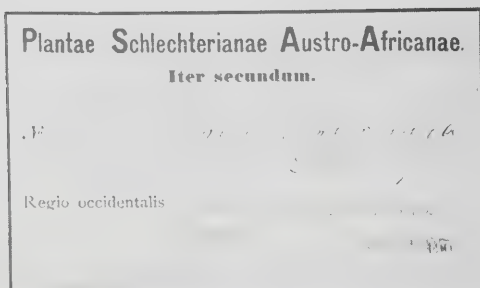


FIG. 13
 Sheet of *Lachenalia concordiana*, herbarium of the British Museum, Natural History,
 London.

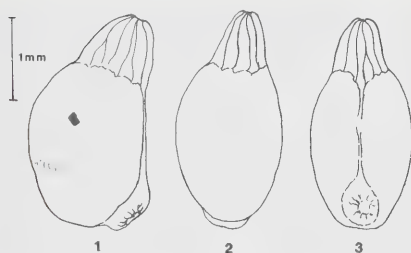


FIG. 14

Lachenalia concordiana: 1. seed side view; 2. seed from above; 3. seed from below.

Type Material: CAPE PROVINCE—2917 (Springbok): 15 m N.E. of Springbok (-DB), 8/9/1950, *Barker 6762* (NBG, holo., iso.).

Until recently only two collections of this distinctive species were known. The original one, collected on 19th September 1897 by R. Schlechter, at Concordia in Namaqualand, was distributed to many herbaria under his manuscript name, now validated. The second was made by W. F. Barker on 8th September 1950 near Springbok. The discovery of a third collection among the incertae in the Bolus Herbarium, collected by C. L. Leipoldt in September 1941 near Garies, a considerable distance to the south, indicates that the species has a wider distribution than was at first thought. Fortunately this material includes capsules with ripe seeds, which were absent in the earlier collections; these assist in placing the species in the group with ridged, terminal arils.

SPECIMENS EXAMINED

CAPE PROVINCE—2917 (Springbok): Concordia (-DB), 19/9/1897, *Schlechter 11322* (B, BM, G, GRA, K, LD, Z); 19/9/1897, *Schlechter 11321?* (PRE); 15 m N.E. of Springbok, 8/9/1950, *Barker 6762* (NBG holo., iso.). —3018 (Khamiesberg): near Garies (-CA), Sept., 1941, *G. L. Leipoldt 3575* (BOL).

Lachenalia glaucophylla Barker, sp. nov.

Distinguitur folio unico glauco anguste lanceolato conduplicato patentis vel curvatis, basi amplexentis, inflorescentis racemosa angusta multiflora, floribus patulis cremeis late campanulatis, segmentibus fere aequantibus, staminibus rectis perspicue exsertis. seminibus oblongis, arillo jugoso terminale stature medio vel breve, in carina angusta decurrente prolongata.

Plant 90–250 mm high, usually dwarf. *Bulb* globose 10–20 mm diam., outer tunics spongy, brown, disintegrating, produced into a short neck. *Leaf* usually 1,

very occasionally 2, narrow-lanceolate, conduplicate; blade up to 130 mm long, usually less, up to 14 mm at ground level, spreading or curved almost at right angles, glaucous green without markings; clasping base up to 70 mm long, white, surrounded by a membranous transparent sheath up to half its length. *Peduncle* usually very short, occasionally up to 60 mm long above ground level, tinged with brown. *Inflorescence* racemose, narrow, 20 mm diam., up to 80 mm long, many-flowered, flowers spreading; bracts minute, obtuse, membranous; pedicels 2–3 mm long, spreading, cream. *Flowers* very small, up to 5 mm long; tube 0.5 mm long, cream; outer segments 4 mm long, ovate, spreading, cream with green gibbosities; inner segments 5 mm long, narrow oblong, spreading, cream with green keel; stamens exerted 7 mm long, spreading, filaments cream; ovary globose 1–2 mm diam., green; style 3–5 mm long. *Capsule* globose 4 mm diam., membranous, about 2 seeds to each loculus; seeds oblong, comparatively large, shining, aril terminal, short or medium, extending as a narrow ridge down to the ridged micropyle.



FIG. 15 a, b.

Lachenalia glaucophylla: a. two plants, one in bud; b. inflorescence close up; c. plants in bud.

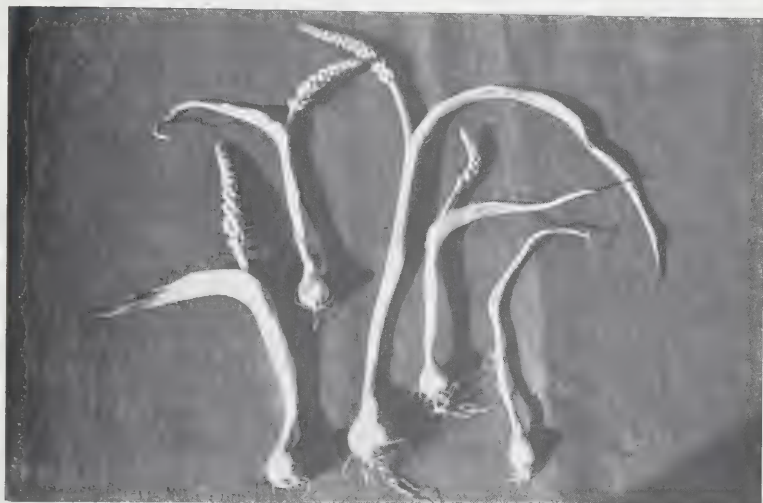


FIG. 15 c.

DIAGNOSTIC CHARACTERS

Lachenalia glaucophylla is easily distinguished by its 1 (or very occasionally 2) linear-lanceolate conduplicate, curved, glaucous leaf, its dense narrow racemose inflorescence composed of very small cream flowers, with spreading segments of almost equal length, and much exerted spreading stamens. Its seed is ovoid, with a terminal, short or medium ribbed aril.



FIG. 16

Lachenalia glaucophylla: 1. seed side view; 2. seed from above; 3. seed from below.

Type Material: CAPE PROVINCE—3319 (Calvinia): 11 miles from Downes on Klipwerf road (-BD), 14/10/1974, *M. Thomas s.n.* sub. NBG 105737 (NBG, holo.).

The earliest collection of this dainty new species to be traced, was collected by Dr. Rudolph Marloth in October, 1917 at Leliefontein in Namaqualand, and is

preserved in the National Herbarium, Pretoria. It consists of two very small specimens in the young fruiting stage, which made its identification difficult. More recent collections representing all stages, including good flowering material have been made, and it is now possible to decide that they represent a previously undescribed species, which is distinctive in leaf and floral characters. The seeds belong to the large group with ribbed arils.

It was found growing in colonies on open flats with sparse vegetation, in very shallow pans where silt had collected. The recent collections have all been made in the Calvinia district, some distance from the Marloth specimens, thus extending the known distribution of the species considerably. The fact that it flowers in October may account for the fact that it has not been more widely collected.

SPECIMENS EXAMINED

CAPE PROVINCE—3018 (Kamiesberg): Kamiesbergen, Leliefontein (-AC), 9/1917, *Marloth 8101* (young fruits) (PRE).

—3319 (Calvinia): Moordenaarspoort, 26 miles N.E. of Calvinia near Agter Hantamsberg (-BD), 6/10/1953, *G. J. Lewis 2630* (SAM); 11 miles from Downes on Klipwerf road, 14/10/1974, *M. Thomas s.n.* sub. NBG 105737 (NBG, holo.).

—3120 (Williston): 40 m E. of Calvinia on Williston road (-AC), 13/10/1976, *Barker 10554* (young fruit) (NBG).

Lachenalia sargeantii Barker, sp. nov.

Distinguitur foliis 2 linearibus lanceolatis conduplicatis patentibus, inflorescentia racemosa, pedunculo atro-marronino, pedicellis longis patulis magenteis, floribus cremeis pendulis tubulosis basi rotundatis magenteis suffusus, segmentis externis gibbosis viridofuscis, segmentis internis longioribus apice macula viridofusca, staminibus inclusis, seminibus globosis, arillo membranoso terminale breve in carina decurrente lato prolongata, testa colliculata.

Plant 200–300 mm high. *Bulb* 15–20 mm diam. with dark brown leathery tunics, producing a nest of bulbils round the base of the bulb. *Leaves* 2, linear-lanceolate, conduplicate, loosely clasping the base of the peduncle, suberect to spreading, up to 300 mm long and 15 mm broad, yellow-green to bluish-green, without markings. *Peduncle* 140–280 mm high, much longer than the raceme, dark maroon and faintly blotched and lightly glaucous. *Inflorescence* racemose, 6–25 flowered; flowers pendulous concentrated into a head, sterile portion at apex very short; bracts white or tinged with magenta, ovate lanceolate, short up to 4 mm long; pedicels to lower flowers shorter, about 4 mm long, increasing in length upwards to 15 mm long spreading to recurved, magenta. *Flowers* up to 25 mm long, pendulous, tubular, rounded at the base and slightly constricted about 3 mm above the base; tube 3–4 mm long; outer segments up to 15 mm long, oblong lanceolate, cream with greenish-brown gibbositities; inner segments longer than the



FIG. 17 a, b, c, d.
Lachenalia sargeantii: a. habitat; b. two plants; c. inflorescence; d. flowers.

outer, up to 20 mm long, 7 mm broad near the apex, slightly emarginate, cream with a greenish-brown blotch near the apex, and a magenta keel; stamens a little shorter than the inner segments; ovary obovoid, 3 mm diam., green; style finally exserted. *Capsule* obovoid, membranous 5 mm diam; seed black, globose with a narrow membranous decurrent aril widening toward the funicle, testa colliculate.

DIAGNOSTIC CHARACTERS

The long cream, pendulous, tubular flowers which are rounded at the base and slightly constricted above it, are grouped at the apex of the long peduncle, on long magenta pedicels, a character which is unusual in the genus. Its seed too is distinctive, agreeing in shape and the colliculate testa with that of its closest ally *L. montana* Schltr. ex Barker, the only two species known to have the latter character.

Type Material: CAPE PROVINCE—3420 (Bredasdorp); (-CA), Bredasdorpberge, in white sand among TMS boulders, 21/11/1970, W. F. Barker 10812 (NBG, holo., iso.).

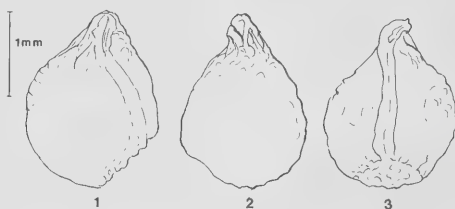


FIG. 18

Lachenalia sargeantii: 1. seed side view; 2. seed from above; 3. seed from below.

This unique species has only been collected in one locality and was found quite by accident by a young visitor from New Zealand, Robert Scott, who when on a hitch-hiking tour of the Western Cape, decided to climb one of the mountains near Bredasdorp in November, 1970, not long after a fire had burnt out a large part of the area. He gathered some small portions of various plants and took them to Mr and Mrs P. A. Sargeant, who brought them to the Compton Herbarium to be identified. Among them were a *Gladiolus* sp. and an inflorescence of this *Lachenalia*, which was completely new to science. Mr Sargeant very kindly arranged a visit to the site with Robert as guide, where a collection was made of specimens for the herbarium and some bulbs for cultivation.

They were found growing in white sand, in open spaces among TMS boulders, on a burnt area with a northern aspect, while the *Gladiolus* sp. was in full flower in crevices of large TMS rocks, where it had been protected from the fire. The *Gladiolus* later proved to be one which had been collected many years before, by Dr H. Bolus, in the same locality at the same time of year. The fact that he failed

to collect the *Lachenalia* suggests that the area had not been burnt at the time, and that *L. sargeantii* requires to be stimulated by fire before it will flower. This supposition is strengthened by the fact that the site was visited in two subsequent seasons, only a few scattered flowering plants were seen on the first occasion, and none at all on the second. Up to the present time the cultivated bulbs have produced leaves but have not flowered.

The species is named in honour of Mr and Mrs Sargeant, who are keen mountaineers and conservationists, and have photographed the high altitude flora of the Western Cape for many years.

SPECIMENS EXAMINED

CAPE PROVINCE—3420 (Bredasdorp): (-CA), 17/10/1970, *R. Scott s.n.* sub. NBG 93894 (NBG), 21/10/1970, *W. F. Barker 10802* (NBG, holo., iso.).

Lachenalia montana Schltr. ex Barker, sp. nov.

Distinguitur foliis 2 linearibus lanceolatis conduplicatis patentibus, inflorescentia racemosa, pedunculo atro-marronino, pedicellis brevis patulis magenteis, floribus cremeis campanulatis ad basim rotundatis, segmentibus externis viridofuscis gibbosis, segmentis internis externa paulo superantibus apice maculo virido-fusca, staminibus paulo exsertis. seminibus globosis, arillo membranoso undulato decurrente, testa colliculata.

Plant 100–330 mm high. *Bulb* globose 10–20 mm diam., with dark brown leathery tunics produced into a short neck. *Leaves* 2, linear or linear-lanceolate, conduplicate loosely clasping the base of the peduncle, suberect to spreading, 150–350 mm long and up to 20 mm broad at ground level, green tinged with maroon toward apex, without markings. *Peduncle* 80–230 mm high, much longer than the raceme, slender, dark maroon, glaucous or faintly blotched. *Inflorescence* racemose 10 to many-flowered; flowers cernuous, concentrated into a short or long head, sterile portion very short; bracts white or tinged with pale magenta, lanceolate, short up to 2 mm long; pedicels very pale magenta, variable in length 2–15 mm long; in the short-headed fewer flowered inflorescences the pedicel are usually 5 mm long, increasing markedly in length toward the apex, in the more elongated heads the pedicels are short at the base and lengthen very gradually to the apex. *Flowers* 5–9 mm long 4–5 mm diam. at the base, cernuous, campanulate, rounded at the base; tube 2 mm long, outer segments up to 5 mm long, ovate cream with greenish-brown gibbosities; inner segments slightly longer than the outer, up to 7 mm long, 4 mm broad, obovate, cream with a greenish-brown blotch near the apex, upper edge of margin slightly recurved; buds tinged with magenta; stamens a little exserted; ovary obovoid, green, 3 mm diam.; style up to 6 mm long, finally exserted. *Capsule* obovoid, membranous, 4 mm diam; seed globose, aril membranous, undulate, decurrent, testa colliculate.



FIG. 19 a, b.
Lachenalia montana: a. habitat; b. inflorescence.

DIAGNOSTIC CHARACTERS

Lachenalia montana has a number of affinities with *L. sargeantii*, the two narrow conduplicate leaves loosely clasping the peduncle, the unusual capitate type of inflorescence, with the pedicels lengthening toward the apex, and the seed which is similar in shape and has a colliculate testa. However it differs in having very much smaller campanulate flowers, forming a denser head, on much shorter pedicels, and the set of the flowers is cernuous rather than pendulous.



FIG. 20.

Lachenalia montana: 1. seed side view; 2. seed from above; 3. seed from below.

Type Material: CAPE PROVINCE—3419 (Caledon): Onrust, Hermanus (-CA), 16/10/1966, *W. F. Barker 10485* (NBG, holo.).

The earliest known collection of this interesting species was made by Zeyher at Houwhoek, and specimens have languished in the incertae in the collections at Kew and at the South African Museum ever since. In November, 1896 Rudolph Schlechter made copious collections at Houwhoek, at an altitude of 600 m, and distributed them to many herbaria under the manuscript name *Lachenalia montana*. Since that time a number of other collections have been made on the seaward side of the mountains at Hangklip, Kleinmond, and Onrust near Hermanus, some only a few feet above sea level, so that the name is not altogether apt, but it seems expedient, as it has been so widely distributed under the name, to retain it.

Many of the recent collections were made on burnt ground, and at Onrust where it grew and flowered in great profusion after a fire in October 1966, it was observed to decrease in flowering capacity in subsequent seasons, as other vegetation recovered and became dominant.

SPECIMENS EXAMINED

CAPE PROVINCE—3319 (Worcester): Louwshoek Peak (-CC), 15/12/1944, *E. Esterhuysen s.n.* sub (BOL).

—3418 (Simonstown): Hangklip (-BD), 6/12/1950, *J. S. Linley s.n.* sub. SAM 61011 (SAM); 6/12/1950, *Werner s.n.* sub. NBG 72391 (NBG).

—3419 (Caledon): Onrust (-AC), 30/10/1962, *Thomas s.n.* sub. NBG 70038 (NBG); Onrust near Hermanus, 16/10/1966, *W. F. Barker 10485* (NBG, holo.);

Fern Kloof Hermanus (-AD), 11/1/1972 (fruiting), *T. T. Barnard* (NBG); Kleinmond, 30/11/1962, *Cloete s.n.* sub. NBG 70035 (NBG); Houwhoek (-BA), December, *Zeyher* 4294 (SAM, K); Houwhoek, 24/9/1896, *R. Schlechter* 9403 (BOL, BM, G, GRA, K, L, PRE, S, Z).

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